

NEW SPECIES OF TIMONIUS (RUBIACEAE)
FROM PAPUASIA

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TIMONIUS DC., the largest genus of tribe Guettardeae, is confined to the paleotropics from the Seychelles eastward through Malesia and tropical Australia to Micronesia and the South Pacific, with the center of diversity in New Guinea. During recent studies of the genus, several new species have been discerned from herbarium material available for examination. Although a revisionary study of the entire genus is planned, the new species are proposed here since the monographic treatment will probably require a concerted effort of several years. I am grateful to the directors and curators of the cited herbaria for making specimens available for loan. This research was partially supported by grant DEB-8102781 from the National Science Foundation. The delimitation and sequence of Papuan geographic regions employed in this study follow those of Coode (*Brunonia* **1**: 131–302. 1978).

Timonius zuckianus S. Darwin, sp. nov.

Ex affinitate speciebus foliis paxillatis praesertim *T. longifolii* Valeton sed floribus longioribus, fructibus magnis, foliorum laminis apice abrupte acute acuminatis et cymis glabris differt.

Shrub or tree to 20 m tall. Branchlets 2–5 mm broad toward apex, compressed but becoming terete, gray, glabrous except puberulent above stipule scars; stipules imbricate, lanceolate, acuminate, to 130 by 15 mm, glabrous without, glabrous within except for slender colleters toward base. Leaves with petiole stout, semi- to sub-terete and somewhat winged by leaf blade, 12–55 mm long, ca. 2 mm broad at middle, glabrous; blade elliptic, 7–13 by 3–7.5 cm, abruptly and sharply acuminate at apex, obtuse at base or decurrent onto petiole, coriaceous, glabrous on both surfaces, the costa plane or canaliculate above, prominent beneath, the lateral nerves indistinct, the veinlets paxillate, prominulous-striate above, prominulous or subplane beneath, the domatia resembling small pits, glabrous or minutely puberulent, dispersed over lower surface. Staminate cymes 5- to 7-flowered, at anthesis to 3 by 3 cm; peduncles stout, compressed, 6–10 by up to 3 mm, glabrous; bracts none; calyx tube cupular, truncate to undulate, (1–)2–3 mm high, glabrous, the basal portion (aborted ovary) to 1.5 mm high; corolla narrowly infundibular, the tube 8–12 by ca. 1.5 mm, glabrous inside and out, the limb 12–18 mm broad, the lobes 4, ovate, 6–8 by 3–4 mm, acute, somewhat irregular at margin; stamens 4, the anthers 5–6 by ca. 0.5 mm, glabrous, included. Pistillate cymes 2- or 3- (or 4-)flowered,

at anthesis to 3.5 by 2 cm, the peduncles stout, compressed, 8–18 by up to 3 mm, glabrous; bracts none; calyx tube cupular, truncate to undulate, 0.5–1 mm high, glabrous; corolla subhypocrateriform, the tube 5–7 by ca. 1.5 mm, glabrous inside and out, the limb to 12 mm broad, the lobes 6 to 8, ovate, to 5 by ca. 1.5 mm, acuminate, somewhat irregular at margin; staminodia 6, ca. 3 by 0.5 mm, glabrous, included; ovary and disc glabrous, the style glabrous, unequally 6-branched, slightly exserted. Fruits short-cylindric to depressed-globose, 6-sulcate, 4–5 by 6–7 mm, glabrous, crowned by persistent calyx; pyrenes 35 to 45, vertically oriented and arranged in 6 radiating double files.

TYPE. Normandy Island, Mt. Pabinama, 820 m alt., 2 May 1956, Brass 25653 ♀ (holotype, A!; isotypes, CANB!, LAE!).

DISTRIBUTION. Islands of extreme southeastern Milne Bay Province of Papua New Guinea.

ECOLOGY AND FIELD NOTES. Common in lower montane forests and stunted mossy forests of ridge-crests from 700 to 1700 m alt. Ranging in habit from a shrub or small tree of about 2 m to a canopy tree 20 m tall. Bark rough, dark brown; wood white to pale straw-colored. Probably flowering and fruiting throughout the year. The pistillate and staminate flowers are reported as white, the fruits as black and fleshy when mature.

SPECIMENS SEEN. PAPUA. PAPUAN ISLANDS: Goodenough Is., E slopes, Brass 24525 ♀ (A, CANB, LAE); Fergusson Is., Mt. Kilkerran, E slopes (Woiatabu), LAE 71045 ♂ (A, BISH, LAE); Tagula Is., Mt. Riu, W slopes, Brass 27839 ♀ (A, LAE), Mt. Emuwa, LAE 74520 ♀ (BRI, CANB, LAE); Rossel Is., Kwa mountain above Abilete, NGF 27077 ♀ (A, BRI, CANB, LAE), Mt. Rossel, summit, Brass 28458 ♀ (A, BO, LAE), Mt. Rossel, S slopes, Brass 28389 ♂ (A, BO, LAE).

Timonius zuckianus is allied to the other species of the genus in which lateral or secondary nerves are only weakly developed, with the paxillate veinlets forming a striate pattern on the upper leaf surfaces in herbarium specimens. In addition, the calyces are truncate and stipules are imbricate in bud. The present species is unusual in its exceptionally large flowers and more prominently acuminate leaf apices. It resembles *T. longifolius* Valeton, from the Sepik area of New Guinea, in its cymose pistillate inflorescences (in all other species of this alliance the pistillate flowers are solitary), but its larger fruits, glabrous inflorescences, and elliptic rather than oblanceolate leaves suggest *T. singularis* (F. Mueller) L. S. Sm., from Australia.

I take pleasure in naming this distinctive species for Dr. and Mrs. Robert K. Zuck, formerly of Department of Botany, Drew University, who inspired many college students to pursue botanical careers.

***Timonius pubistipulus* S. Darwin, sp. nov.**

Ex affinitate speciebus foliis paxillatis praesertim *T. belensis* Merr. & Perry sed stipulis intus minimum in centro vel basin versus dense pallidis sericeis differt.

Epiphytic shrub or terrestrial tree to 35 m tall. Branchlets 3–4 mm broad

toward apex, compressed but becoming terete, either glabrous except puberulent above stipule scars or conspicuously pubescent; stipules imbricate, lanceolate, to 80 by 15 mm, long-acuminate, glabrous without, toward center or base densely pale-sericeous within. Leaves with petiole stout, semi- to subterete, 4–20 mm long, 1.5–2 mm broad at middle, glabrous; blade elliptic to obovate, 4–12 by 1.5–5.5 cm, acute to short-acuminate at apex, acute to subattenuate at base, rigidly coriaceous, glabrous above and beneath, the costa canaliculate above, prominent beneath, the lateral nerves hardly distinguishable, the veinlets paxillate, subplane to prominulous on both surfaces, the domatia resembling small pits, glabrous to minutely puberulent. Staminate cymes 3- to 5-flowered, in bud ca. 1.5 by 1 cm; peduncles stout, subcompressed, 3–5 by 1.5–2 mm, glabrous; bracts none; calyx tube cupular, truncate to obscurely obtuse-denticulate, 0.5–2 mm high, glabrous; corolla narrowly infundibular, the tube to 8 by ca. 1.5 mm, glabrous inside and out, the limb to 5 mm broad, the lobes 4, lanceolate, ca. 3.5 by 1 mm, sharply acuminate; stamens 4, the anthers ca. 6 mm long, glabrous. Pistillate flowers solitary; peduncle compressed, 1–5 by 1–2 mm, in fruit to 12 mm long; glabrous; bracts none; calyx tube cupular to cylindrical, truncate to undulate, 0.5–1 mm high, glabrous; corolla broadly infundibular, the tube (3–)5–7 by 2–2.5 mm, sometimes somewhat broader in throat, glabrous inside and out, the limb to 8 mm broad, the lobes 6 or 8, lanceolate, 2.4–3.5 by 1–1.5 mm, conspicuously acuminate; staminodia 6, ca. 2 mm long, glabrous, included; ovary subglobose, 3–3.5 by 3–4 mm, glabrous like the disc, the style 6- to 8-branched, subexserted. Fruits subglobose to broadly ovoid and somewhat laterally compressed (when dried appearing distally sulcate and proximally tuberculate), 6–9 by 7–10 mm, glabrous, crowned by persistent calyx; pyrenes 30 to 45 in transverse section, ca. 10 in vertical section, probably up to 60 per fruit, subvertically oriented.

I am readily able to distinguish two varieties within this species.

Timonius pubistipulus var. pubistipulus

T. avenis sensu Merr. & Perry, Jour. Arnold Arb. **26**: 235. 1945, *pro parte, non* Valeton.
T. carstensis sensu Merr. & Perry, Jour. Arnold Arb. **26**: 238. 1945, *pro parte, non* Wernham.

TYPE. Papua New Guinea, Western Highlands Province, Minj River valley above the Nona River camp, in *Nothofagus* forest at 9000 ft alt., 30 July 1957, Pullen 268 ♀ (holotype, A!; isotypes, BISH!, BM!, BO!, BRI!, CANB!, G!, LAE!).

DISTRIBUTION. Interior of North East New Guinea and Papua.

ECOLOGY AND FIELD NOTES. In montane *Araucaria*, *Nothofagus*, and moss-forests or swamps, 350–3400 m alt.; most collections from above 1500 m alt. Epiphytic shrubs, "climbers," or trees to 30 m tall with trunk diameters to 0.5 m, frequently in forest edges, burnt-over areas, and other open habitats. The bark surface varies from gray and smooth to brownish and pustular or scaly; the wood is white to reddish straw-colored; the stipules frequently reddish and conspicuous. Staminate and pistillate flowers vary in color from white to green-

ish, yellowish, or rarely pinkish, with the corolla lobes often paler than the tube; mature fruits are dark red to black. Flowering and fruiting throughout the year.

VERNACULAR NAMES. "Komai" (Kiliga), "Kormai" (Enga), "Kumai" (Hagen, Kiliga, Togoba), "Kume" (Mendi), "Kumeh" (Onim), or "Ome" (Mendi); "Haikapula" (Ialibu); "Abalan" (Enga); "Moghon" (Nerenavip); "Sikil" (Togoba); "Takuneh" (Naho); "Torobin-kama" (Sinasina-Nimai); "Tombarumb," "Tombumpf," or "Tomburump" (Minj); "Yambasi" (Fiyugi).

SPECIMENS SEEN. **North East New Guinea.** WEST SEPIK: S of Nerenavip, Hindenburg Range, *NGF 32144* ♀ (A, BRI, CANB, LAE), *NGF 32181* ♂ (A, BRI, CANB, LAE). MADANG: S slopes Finisterre Range to S of Mt. Abilala, *Pullen 6132* ♀ (CANB, L, LAE). MOROBE: Mannasat, Cromwell Mts., *Hoogland 9600* ♀ (A, BRI, CANB, LAE); Sarawaket, *Clemens 5758* ♀ (A); summit of Mt. Shongul, *NGF 37434* ♂ (LAE); New Yamap, *NGF 27552* ♀ (A, BRI, CANB, LAE, SING); Aseki Road, ca. 57 km from Bulolo, *LAE 75226* ♀ (LAE, UPNG); Angabena ridge near Haumuga, Aseki area, *Schodde & Craven 4743* ♀ (A, BRI, CANB, L, LAE); Edie Creek road above Wau, *NGF 13489* ♀ (BRI, CANB, LAE); Bulldog Road ca. 20 km S of Wau, *Fallen 550* (LAE); above Bakaia, ca. 15 mi SW of Garaina, *Hartley 12716* ♀ (A, BRI, CANB, L, LAE). WESTERN HIGHLANDS: Sirunki, Marapamanda, E of Laigam and N of Yamara, *ANU 762* ♀ (A, CANB, LAE); N slopes of Sugarloaf complex along Wapu R., *Hoogland & Schodde 7089* ♀ (A, BM, BRI, CANB, LAE, Z); ca. 5 mi N of Londoli, Ambum Valley on Wabag-Maramuni Road, *Saunders 1013* ♂ (CANB, LAE); River Kum, Mt. Kum, *LAE 50320* ♀ (A, CANB, LAE); Tomba, *NGF 35512* ♂ & ♀ (LAE); top of Mt. Oga, *Saunders 677* (A, BM, LAE); slopes of Mt. Kinkain, Kubor Range, *Saunders 741* (CANB); upper Nona R., *Saunders 747* (A, BM, BRI, CANB, LAE), *Saunders 748* (CANB); Minj-Nona Divide, N side of Kubor Range, *Pullen 5167* ♀ (A, BRI, CANB, LAE); Kubor Ranges above Kuli, *Robbins 524* ♀ (LAE). EASTERN HIGHLANDS: 2 mi SW of Koge Mission, Sinasina, *Hide 309* ♀ (LAE), *Hide 486* (LAE). **Papua.** SOUTHERN HIGHLANDS: Mimimbipl, 20 mi from Mendi, Tambul Road, *LAE 55321* ♀ (A, BISH, LAE); W slope of Mt. Giluwe above Klareg, *Schodde 2015* ♀ (A, BRI, CANB, LAE); SW slope of Mt. Giluwe, *Schodde 1673* ♂ (A, CANB, LAE); base of Mt. Giluwe, *LAE 74437* ♀ (BRI, CANB, LAE); slopes of Mt. Giluwe, *NGF 32502* ♀ (A, BRI, CANB, LAE, SING); Omin, *ANU 20326* (LAE); near Capuchin Mission sawmill, N side of Pangia Road 4 mi E of Ialibu, *UPNG 4224* ♀ (UPNG). CENTRAL: E of Mt. Tafa, *Brass 4077* ♀ (BRI); Mt. Tafa, *Brass 5046* ♀ (BO, BRI); road from Woitape to Kosipi, Iowasi Swamp, *NGF 20308* ♀ (A, BO, BRI, CANB, LAE, SING); E slope Lake Myola no. 2, *NGF 34629* ♀ (A, BISH, LAE); Koitaki, *Carr 12522* ♀ (A, BM, CANB, SING); Boridi, *Carr 13095* ♀ (A, CANB, SING), *Carr 13343* ♀ (A, BM, CANB, SING), *Carr 14607* ♂ (A, BM, CANB); Lala Valley, *Carr 15856* (BM, L, SING); The Gap, *Carr 15042* ♂ (A, BM, SING); above The Gap, *Carr 13819* ♀ (A, BM, CANB, K); Sogeri region, *Forbes 770* ♀ (A, BM, L). NORTHERN: Kokoda, *Carr 16453* ♀ (B, CANB), *Carr 16478* ♂ (CANB, G). MILNE BAY: junction Ugat and Mayu rivers near Mayu 1, *NGF 28897* ♀ (A, BISH, CANB, LAE, SING); Mayu 2, Mt. Suckling, *LAE 54117* ♀ (A, CANB, LAE); Goropu Mts., Pumpunipon to S ridge of Goe Dendeniwa, *Veldkamp & Stevens 5694* ♂ (BISH, L, LAE); track, S spur to Pumpunipon, Mt. Suckling complex, *LAE 54178* ♀ (CANB, LAE); N slopes of Mt. Dayman, Maneau Range, *Brass 22304* ♀ (A, CANB, LAE), *Brass 22702* ♀ (A, CANB, LAE), *Brass 22874* ♀ (A, CANB, LAE); Mt. Dayman, *Paijmans 1090* ♀ (CANB); Mt. Wadimana, NE outlier of Mt. Simpson, *Pullen 7842* ♂ (A, LAE); summit area, Mt. Wadimana, *Schodde 5472* ♂ (CANB, L, LAE); Aparamu Ridge, E of Mt. Simpson Range, *Schodde 5519* (CANB).

Timonius pubistipulus var. **pubescens** S. Darwin, var. nov.

Omnio idem ac varietas typica sed ramuli pubescentia conspicua et plus minusve persistenti differt.

TYPE. Papua New Guinea, Morobe Province, Mt. Kaindi near Edie Creek, heavy liana in a *Nothofagus* forest, 7900 ft alt., 9 May 1963, Hartley 11840 ♀ (holotype, A!; isotypes, C!, CANB!, G!, L!, LAE!).

DISTRIBUTION. Interior of eastern West New Guinea, North East New Guinea, and Papua.

ECOLOGY AND FIELD NOTES. Montane forests, 1500–2600 m alt.; mainly in swamps, myrtaceous scrub, edges of trails, ridge-tops, old landslides, and other open or successional habitats. Varying in habit from epiphytic shrubs to lianas or slender trees to 25 m tall with trunk diameters to 25 cm. The bark surface is pale gray to dark brown and smooth, the wood white to pale brown. The flowers are yellowish or brownish white, rarely dull pinkish, and the fruits are maroon to black when mature. Flowering and fruiting throughout the year.

VERNACULAR NAME. "Komai" (Enga).

SPECIMENS SEEN. **West New Guinea.** SNOW MOUNTAINS: Bijenkorfbivak, Helling Hellwigberg, Pulle 773 (A, L). **North East New Guinea.** WEST SEPIK: Folongonom, second bush camp below Tamanagabip on track to Busilmin, LAE 59483 ♀ (A, BISH, LAE). MOROBE: NE slope of Mt. Rawlinson, Hoogland & Craven 9341 ♀ (A, BM, BRI, CANB, K, LAE); Ogeramnang, Clemens 4649 ♀ (A, B); Aseki-Spreader Divide, LAE 54772 ♀ (A, BISH, CANB, LAE); E slope Spreader Divide, ca. 7 mi NW of Aseki, Schodde & Craven 4904 ♀ (A, BRI, CANB, LAE); near Wengomanga, via Oiwa, Craven & Schodde 1291 ♀ (CANB, LAE); along water race of N. G. Mine, NGF 21063 ♀ (A, BISH, BRI, CANB, LAE, SING); Edie Creek, NGF 19948 (CANB, LAE), NGF 19959 ♀ (A, BISH, BO, BRI, CANB, LAE, SING), Hartley 11725 ♂ (A, BRI, CANB, LAE); Mt. Kaindi, SE slope, Allison NG-195 ♀ (LAE); track descending SE from S summit of Mt. Kaindi, UPNG 3114 (UPNG); ca. 14 km WSW of Wau, Mt. Kaindi, Allison NG-171 ♀ (LAE); Mt. Kaindi summit, NGF 13908 ♀ (A, BO, BRI, CANB, K, LAE); Kaindi, Brass 29559 ♀ (A, BO, CANB, LAE), Brass 29561 ♂ (A, CANB, LAE); ca. 15 km SSW of Wau, Bulldog Road, WEI 1374 ♀ (LAE); Bulldog Road, 12 km SSE of Wau, Pratt NG-105 ♀ (LAE); Bulldog Road ca. 13 km SSE of Wau, Allison NG-161 ♀ (LAE); Lake Trist, NGF 29135 ♀ (A, BRI, CANB, LAE, SING); 5 km E of Lake Trist, Pajmans 1568 ♀ (CANB, LAE). **WESTERN HIGHLANDS:** top of ridge 3 mi S of Kompiam, ANU 2805 ♀ (A, CANB, K, LAE). **EASTERN HIGHLANDS:** confluent Warapuri and Kori rivers, Wahgi-Jimmy Divide, N of Nondugl, NGF 18173 ♀ (BRI, CANB, LAE); summit Mt. Elandora, Jermy 5025 ♀ (LAE). **Papua.** **SOUTHERN HIGHLANDS:** Onim, Rau 160 ♀ (LAE). **WESTERN:** Mt. Bosavi, N side, Jacobs 8859 ♀ (BISH, L, LAE). **NORTHERN:** E side of Lake Myola no. 1, LAE 61972 ♂ (BISH, BO, CANB, LAE, MO, SING).

Timonius pubistipulus, clearly allied to other paxillate-veined species of the genus, is most closely related to *T. belensis* Merr. & Perry, with which it is sympatric in the western part of its range. However, the present species is readily distinguishable from all other "paxillate" species by its stipules, which are conspicuously and densely pale-sericeous on the inner (adaxial) surface. Although the extent of the stipular pubescence varies, I have had no difficulty assigning specimens here. Most pistillate material can be recognized as belonging to *T. pubistipulus* on the basis of the subvertically arranged pyrenes; these are intermediate between the very oblique pyrenes of *T. belensis* and the strictly vertical ones of such other species as *T. avenis* Valeton.

Timonius pubistipulus var. *pubescens* differs from the typical variety in its branchlets that are usually conspicuously brown-pubescent, at least when young.

rather than glabrous. This is a feature shared with *T. trichanthus* Merr. & Perry, although that species has pubescence extending to the outer surfaces of stipules and lower surfaces of leaf blades, as well as other distinguishing characters. On the basis of available collections, it appears that var. *pubescens* extends farther west but not so far east as var. *pubistipulus*, but the varieties are sympatric through most of their range and occupy similar habitats.

Timonius subavenis (Valeton) S. Darwin, comb. nov.

Timonius scaber Valeton var. *subavenis* Valeton, Bot. Jahrb. **61**: 51. 1927.

Epiphytic shrub, or at maturity small tree. Branchlets 2–3 mm broad toward apex, compressed but becoming terete, pubescent with scattered, spreading, brown hairs; stipules imbricate, lanceolate, to 45 by 10 mm, acuminate, abaxially hirsute toward base and center with somewhat shaggy brownish hairs but usually glabrous toward margin, adaxially glabrous except for scattered collectors. Leaves with petiole slender, 5–15 mm long, 1–2 mm broad at middle, hirsute; blade long-elliptic to oblanceolate, 4–14 by 3–7.5 cm, at apex long-acuminate to sharply acute, at base cuneate and decurrent, thinly coriaceous to chartaceous, above short-pubescent when young, soon glabrous except base of costa, beneath sparsely to densely appressed or spreading brown-pubescent, the costa plane to canaliculate above, prominent beneath, the lateral nerves obscure above, submerged beneath, the domatia absent. Staminate cymes 3- to 11-flowered, at anthesis 1.5–3 by 1.5–2.5 cm; peduncles 2–8 by ca. 1.5 mm, densely tomentose to subglabrous; bracts absent; calyx cupular, truncate, the limb about 0.5 mm high, glabrous, the basal portion (abortive ovary) about 1 mm high, pubescent but at very base glabrous and constricted; corolla narrowly infundibular, the tube to 10 mm long (late bud), densely hirsute outside with distally pointing hairs, probably glabrous inside, the lobes 4. Pistillate flowers solitary; peduncle to 5 by ca. 2 mm, puberulent with scattered hairs to glabrous; bracts not seen; calyx tube cupular, truncate, about 0.5 mm high, glabrous; corolla narrowly infundibular, the tube 6–7 mm long, to 1.5 mm broad at middle, hirsute outside, probably glabrous inside, the limb 5–6 mm broad, the lobes 6, to 2 mm by ca. 1 mm, acute; ovary subglobose, 3–3.5 by 3–3.5 mm, pubescent with scattered long hairs to glabrous. Fruits subglobose, somewhat laterally compressed, 4–5 by 3.5–6 mm, 6- to 8-ribbed, pubescent like ovary, crowned by persistent calyx and disc; pyrenes to 45 per fruit, vertically oriented, arranged in 6 to 8 radiating double files corresponding to ribs.

TYPE. The identity of Valeton's species *Timonius scaber* is as yet uncertain since I have not located any material of *Ledermann* 13086 (pistillate), the only collection cited (Bot. Jahrb. **61**: 50. 1927). Variety *subavenis* would seem even more mysterious since no collection at all was cited, but one staminate specimen, *Ledermann* 8793 (SING!), is annotated "Timonius scaber var. *subavenis* n. sp." on a Berlin Museum label, possibly in Valeton's hand. This I designate the lectotype of *T. scaber* var. *subavenis*, here elevated to specific rank. The lectotype agrees well with Valeton's unusually brief description. It bears only the locality "Sepik-Gebiet," but was probably collected in the vicinity of Malu and April River (Fl. Males. **1**: 317. 1950).

ECOLOGY AND FIELD NOTES. Ranging in habit from an epiphyte to a liana, shrub, or small tree. The few available collections were made in primary forests and swamp forests at 50–1750 m alt. Staminate and pistillate flowers are white to reddish. Flowering and fruiting throughout the year.

SPECIMENS SEEN. West New Guinea. SNOW MOUNTAINS: Bijenkorfsvak, Zuidhelling Hellwigberg, *Pulle* 650 ♂ (A, BO, L, SING); Pesechem-vallei, *Pulle* 1155 ♂ & ♀ (BO, L). DJAJAPURA: Rouffaer R., *Docters van Leeuwen* 10141 ♀ (A, BO, K, L), *Docters van Leeuwen* 10172 ♂ (BO, K, L); Bodem R., 60 km SE of Sarmi, *BW* 8101 ♀ (BR, CANB, LAE); Bernhard bivouac, *Meyer Drees* 499 ♂ (A, BO, K, L, SING), *Meyer Drees* 607 ♂ (BO, L).

Timonius subavenis is similar to *T. trichanthus* Merr. & Perry but occupies a more westerly range. As in *T. trichanthus*, stipules and corollas (staminate and pistillate) are pubescent outside, the fruits are sulcate with the pyrenes arranged vertically, and the staminate inflorescences have fewer than 15 flowers. The differentiating characters lie mainly in the calyces: in *T. trichanthus* the basal portion (ovary or abortive ovary) is glabrous or nearly so (vs. pubescent in *T. subavenis*) while the calyx tube is pubescent and 1 mm or more high (vs. glabrous and about 0.5 mm high in *T. subavenis*). In addition, the pistillate peduncles are somewhat longer in *T. trichanthus*.

Timonius paiaensis S. Darwin, sp. nov.

Ex affinitate *T. laevigati* Valeton sed foliorum nervis lateralibus utrinque 5–7 supra impressis infra prominentibus differt.

Shrub or slender tree to 8 m tall. Branchlets 3–5 mm broad toward apex, compressed but becoming terete, yellow-puberulent; stipules valvate, deltoid, to 15 by 5 mm, acute, minutely and densely puberulent without, densely yellow-hirsute within. Leaves with petiole rigid, semiterete, 5–20 by 1–3 mm, glabrous to subpuberulent; blade narrowly elliptic to suborbicular, 7–18 by 2.5–12 cm, gradually or abruptly sharp-acuminate at apex, narrowly to broadly cuneate at base, subcoriaceous, glabrous and glossy above (dark when dried), glabrous or with small hairs scattered over lamina and frequently denser on costa and nerves beneath, the costa plane to canaliculate above, elevated beneath, the lateral nerves spreading, 5 to 7 on each side of costa, impressed above, prominent beneath, the veinlets subimpressed above, reticulate, the domatia inconspicuous in axils of lateral nerves. Staminate cymes to 20-flowered, at anthesis ca. 2 by 2–3 cm; peduncles stout, 3–15 by ca. 2 mm, yellow- to brown-puberulent; bracts broadly clasping, to 3 by 5 mm, rounded at apex, pubescent, caducous, probably a larger, caducous, opposite pair enclosing young inflorescence (not seen); calyx narrowly ellipsoid to ovoid, in bud 4–7 mm high, the limb irregularly 5-toothed, often rupturing laterally; corolla (seen in bud) yellow- to red-puberulent, the lobes 5. Pistillate flowers solitary; peduncle 4–15 (–22) by ca. 2 mm, yellow-puberulent; bracts connate, calyptrate, to 8 mm long, puberulent, caducous, affixed beneath ovary; calyx tube ca. 2 (3–5 in fruit) mm high, distally contracted and confluent with top of ovary, 6-toothed or somewhat erose; corolla narrowly infundibular, the tube ca. 8 by 2 mm, pale sericeous without, probably glabrous within, the limb ca. 10 mm broad, the lobes 6, narrowly lanceolate, ca. 4 by 1 mm, acute; style pubescent. Fruits

subglobose to obturbinate, 9–14 by 9–14 mm, densely yellow-puberulent, crowned by persistent calyx; pyrenes ca. 25 in transverse section, ca. 18 mm long, obliquely oriented in reddish pulp, surrounded by firm mesocarp 1–2 mm thick.

TYPE. Papua New Guinea, Morobe Province, 10 mi up Paiawa River, low shrub or small tree, 20 October 1965, NGF 25030 ♀ (holotype, A!; isotypes, BISH!, BRI!, CANB!, LAE!, SING).

ECOLOGY AND FIELD NOTES. Shrubs or slender trees apparently confined to riverine habitats, from sea level to 600 m alt. The bark surface is reported as gray to brown, smooth or somewhat vertically fissured; the wood is white to brown. The flowers are noted as white to greenish or brownish, and the fruits are reddish when mature. Flowering and fruiting between May and October.

SPECIMENS SEEN. North East New Guinea. MOROBE: Baden Bay, Buso, NGF 39097 ♂ & ♀ (A, BRI, CANB, LAE); Buso, NGF 47767 ♀ (A, BISH, BO, BRI, CANB, LAE); near Buso, growing on Buso R., LAE 52328 ♂ & ♀ (A, BISH, LAE), Conn et al. 301 ♀ (A); Buso Forestry Camp, Conn 313 ♀ (A, CANB); Paiawa Valley, NGF 47318 ♀ (BISH, BO, BRI, CANB, GH, LAE), NGF 47326 ♂ (LAE); Saru R., 7 mi SE of Garaina, NGF 47993 ♀ (A, BISH, BO, BRI, CANB, LAE).

Timonius paiaensis is similar to *T. laevigatus* Valeton in its coriaceous leaves, yellow-pubescent branchlets, deltoid, valvate stipules, and denticulate calyces that in pistillate specimens are more or less confluent with the top of the ovary in the young bud. The leaves of *Timonius laevigatus*, however, have more numerous lateral nerves that are neither impressed above nor strongly elevated beneath. Furthermore, the two species have very different geographic ranges: *T. laevigatus* extends from the Sepik region of Papua New Guinea westward, while *T. paiaensis* seems confined to Morobe Province.

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